

**What is claimed is:**

1. A production method of a curved-surface metal mold having a fine uneven structure characterized by comprising:

forming a silicon-base film on a curved-surface base substrate formed in a specified shape;

etching the silicon-base film with a mask to form a specified shaped fine uneven structure pattern;

bonding a metal used for the metal mold on the silicon-base film with the fine uneven structure pattern formed thereon; and

removing the silicon-base film after the fine uneven structure pattern is transferred to the metal used for the metal mold to form the metal mold having the fine uneven structure on the curved surface thereof.

2. The production method of the curved-surface metal mold having the fine uneven structure according to claim 1 characterized in that said fine uneven structure pattern is an antireflection pattern.

3. The production method of the curved-surface metal mold having the fine uneven structure according to claim 1 or 2 characterized in that said mask is made from a photoresist, and an antireflective film is formed between said curved-surface base substrate and silicon-base film.

4. The production method of the curved-surface metal mold having the fine uneven structure according to claim 1 or 2 characterized in that a mold release material

film is formed between said curved-surface base substrate and silicon-base film.

5. The production method of the curved-surface metal mold having the fine uneven structure according to any of claims 1 to 4 characterized in that said silicon-base film is a silicon dioxide film formed by a sputtering method.

6. A production method of a metal mold having a fine uneven structure characterized by comprising:

forming a silicon-base film on a curved-surface base substrate formed in a specified shape;

providing a mask on the silicon-base film, the mask having a specified shaped fine uneven pattern on an effective area part of the mask, and the uneven pattern changing its volume percent toward the outside of the mask;

etching the silicon-base film using the mask to form a fine pattern composed of fine unevenness gradually becoming deeper from the outer region to the inner region and having a predetermined depth and shape on the effective area;

bonding metal used for the metal mold to the substrate with the uneven pattern formed thereon; and

releasing the metal used for the metal mold from the substrate to form a metal mold after the uneven pattern is transferred to the metal used for the metal mold.

7. A production method of an optical element characterized by:

forming a silicon-base film on a curved-surface base substrate formed in a specified shape;

etching the silicon-base film using a mask to form a pattern of a specified shaped fine uneven structure;

bonding metal used for the metal mold to the silicon-base film with the pattern of fine uneven structure formed thereon;

removing the silicon-base film after the pattern of the fine uneven structure is transferred to the metal used for the metal mold to form a metal mold having the fine uneven structure on the curved surface of the metal mold;

attaching the metal mold to at least either of a stationary mold or moving mold; and

performing an injection molding with the stationary mold and moving mold to manufacture the optical element having the fine uneven structure on at least one of surfaces thereof.